Supplementary Information

Why Surface Diffusion is the Same in Ultrastable, Ordinary, Aged, and Ultrathin Molecular Glasses?

![Figure S1](image)

**Figure S1.** Arrhenius plot of the experimental $\alpha$-relaxation times (triangles) and the calculated primitive relaxation times $\tau_0$ (open squares) of bulk PMPS. The dashed line is the Vogel-Fulcher fit to the $\alpha$-relaxation times of bulk PMPS. The filled circles are the relaxation times $\tau_{\text{film}}$ of the 1.5 nm thin film. There is good agreement between $\tau_{\text{film}}$ and $\tau_0$. 
Figure S2. Relaxation map representing the structural (open symbols), the secondary JG (closed symbols) and the $\gamma$- (crossed symbols) relaxation times in di-propylene glycol dibenzoate (DiPGDB) as a function of inverse temperature for three different isobaric conditions: 0.1 MPa (circles), 268 MPa (triangles), 530 MPa (squares). At the reference temperature where $2\pi\tau_\alpha=100$ s the value of $\tau_{JG}$ is almost constant within the range represented by the grey rectangle on the y-scale.
Figure S3. Poly(phenylglycidylether) (PPGE). (a) Pressure dependence of the logarithm of $\tau_{\text{max}}$ for the $\alpha$- (full symbols) and the $\beta$- (open symbols) process, at two different values of $T$: 293 (squares), and 267.6 K (circles) (b) Temperature dependence of the logarithm of $\tau_{\text{max}}$ for the $\alpha$- (full symbols) and the $\beta$-(open symbols) process, at two different values of pressure: 0.1 (triangles), 240 MPa (stars), and 500 MPa (diamonds). In both panels the continuous lines represent fit with the VFT ($\alpha$-relaxation) and Arrhenius ($\beta$-relaxation) equations. The horizontal dotted line shows the relaxation time value used to define the glass transition. Crosses are the extrapolated values of $\tau_{\text{fmax}}$ at (T,P)s.
Figure S4. Logarithm of characteristic time of dielectric loss maximum of DGEBA (diglycidyl ether of bisphenol-A, $M_w=380$ g/mol, also known as EPON 828) for $\alpha$-relaxation and JG $\beta$-relaxation in isobaric condition versus reciprocal temperature (a), and in isothermal condition versus pressure (b), and an overall plot of the same data versus $\rho/\gamma T$ (c). When not shown, error bars are smaller than symbol size. Black asterisks in panel (c) indicates the values for $\log_{10}(\tau_0)$ at several state points calculated by the Coupling Model Eq.(10) with the stretch exponent $\beta_k=(1-n)=0.52$ obtained by fitting the frequency dispersion of the $\alpha$-relaxation by the Fourier transform of the Kohlrausch-Williams-Watts function, Eq.(2). Density data in the glassy state have been extrapolated from the values of glass compressibility and expansivity.